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## THE NONSPECIFIC RESPONSE OF THE BODY TO ANY DEMAND.

Stress mechanism has 3 parts:

1. direct effect of stressor on the body. (give example)
2. internal response mediated by the nervous system which stimulates tissue defense or help to destroy damaging substances
3. internal responses that inhibit unnecessary or excessive defense.

Resistance and adaptation depend on a proper balance of all 3 parts.

Stress is neither good nor bad, which are human judgements. Distress can be defined as the application of a stressor that has a negative impact on a person. ("Good" stress, eustress, such as reflex contraction of arm muscles to remove hand from hot or sharp surfaces, has a positive impact)

31 signs of distress:

1. General irritability, excessive excitation or depression.
2. Heart pounding.
3. Dry mouth and throat.
4. Impulsive behavior and/or emotional instability.
5. Overpowering urge to cry or to run and hide.
6. Inability to concentrate and general disorientation.
7. Feelings of dizziness, unreality and weakness.
8. Fatigue easily.
9. Feeling "afraid" for no specific reason.
10. Emotional tension – being "wound up."
11. Trembling, nervous tics.
12. Easily startled by sounds.
13. High-pitched, nervous laughter.
14. Stuttering or other speech difficulties that are stress-induced.
15. Grinding of the teeth, frequently noted by partner at night. This may be the cause of unexplained jaw and neck pain.
16. Insomnia.
17. Unable to sit quietly and relax.
18. Excessive sweating.
19. Frequent urination.
20. Indigestion, diarrhea, queasiness and other intestinal problems.
21. Migraine headaches.
22. Premenstrual tension or amenorrhea (missed menstrual cycle).
23. Neck and low back pain.
24. Change in appetite – either greater or less.
25. Increased smoking.
26. Increased use of drugs, either prescribed or recreational.

27. Increased alcohol intake.
28. Nightmares.
29. Neurotic behavior such as ...
30. Psychoses such as ....
31. Accident-prone.

Most of the above 31 signs can be referred to as dis-ease.

If left untreated, the dis-ease will progress to disease,

Chronic stress leads to:

- 1) Memory loss
- 2) Hypertension (corticoids > kidney artery constriction > inc. BP)
- 3) Heart disease
- 4) Stomach ulcers (ACTH > increased glucocorticoids > stomach hyperacidity)
- 5) Increased frequency and severity of muscle and joint injuries (fight or flight mechanism causes muscles to have greater tone, less 'give,' increased susceptibility to injury)
- 6) Increased frequency and severity of colds, sinusitis, ear infections (cortisol suppresses immune fxn)

Stressors of daily life:

1. Career/job:
  - dissatisfaction with
  - normal job duties causing distress
  - change of
2. Moving
3. Loss of a loved one
4. Catastrophic events
5. Air and water pollution
6. Social and/or cultural differences
  - Gay/lesbian/bisexual/transgendered
  - Effects are from person with difference functioning in society
7. Change in population concentration
  - From rural to urban and vice-versa
8. Sensory deprivation
  - Leads to boredom
9. Isolation/loneliness
  - Perceived isolation has same effect as true isolation
  - Social isolation (outcast) – effects are from society avoiding person
10. Travel of any kind (business, vacation) is a physical stressor
11. Urbanization (distinct from change in population density) the more urban the environment, the more distress is generated through the following mechanisms:

More 'on the spot' decisions required, e.g. driving  
Greater likelihood of having an unpleasant experience with another person  
Greater difficulty completing 'simple' tasks – harder to drive, shop, etc.

12. Diet may predispose a person to distress. A poor diet (one deficient in nutrient density) will not allow for the proper handling of a normal amount of stress, leading to distress coming from a minor stressor that would otherwise not cause distress.
13. Neurochemical causes – changes in neurotransmitters (serotonin, GABA, dopamine) through drug use, prescription or recreational, leads to greater levels of anxiety.

Weight gain due to stress:

#### **NORMAL**

- 1) Stress response > brain releases cortico-tropin-releasing hormone (CRH)
- 2) CRH > increased ACTH >
  - a) appetite suppression thereby moving blood from GI tract to muscles
  - b) stimulation of adrenal cortex causes release of:
    - i. adrenaline/epinephrine
    - ii. cortisol
  - c) sugar mobilized for short-term energy rush, followed by fight or flight
  - d) After rush, cortisol sparks hunger for carbohydrates & fat to replenish depleted stores.

#### **CHRONIC**

Same as above to 2(c) – usually not followed by activity, i.e. fight or flight  
Instead, repeated activation of stress response daily leads to:

- 1) Long-term elevation of cortisol >
- 2) Increased insulin release by pancreas >
- 3) Causes body to preserve, *and increase*, fat deposits.

#### **TO FURTHER COMPLICATE MATTERS:**

People who tend to eat when stressed are also *more likely to have a genetic predisposition* to neurotransmitter imbalances. **NORMAL** response is:

- 1) **serotonin**: decreases under stress response. Lowered levels cause further desire for sweets because sweets raise serotonin levels, proteins & fats do not.
- 2) **Dopamine**: increases under stress. Causes increased appetite and aggression/fight.
- 3) **Norepinephrine**: increased under stress > decreases appetite, sexual desire.

#### **COPING MECHANISMS**

Coping mechanisms are used when the cause of the distress is not removed,

Stress, or distress, relievers such as meditation, exercise, massage will lower serum cortisol levels.

Drugs: valium, ambien, excedrin PM, Tylenol PM, xanax, paxil, prozac

Recreational drugs: alcohol, tobacco, cocaine, pot, crystal meth, ecstasy, ...

Coping mechanisms are necessary for us to exist in harmony with our environment. HOWEVER – the coping mechanism itself may become the cause of distress.

Coping mechanisms do not address the cause of the distress, only the effects of it.